4 3
24. (amended) The method of claim ~~23~~ wherein the flow [path is] paths are coated with protein.--

CR

REMARKS

The continued examination of the current application is respectfully requested pursuant to 37 C.F.R. §1.114. Pursuant to this continued examination, it is respectfully requested that the above amendments be considered in light of the following remarks, and that all claims pending in this application be allowed.

Following entry of the above amendments, claims 16 and 22-26 are pending in this application.

Correction of Inventorship

A Request to Correct Inventorship pursuant to 37 C.F.R. §1.48(b), together with the required fee pursuant to §1.17(i) accompanies this amendment. In summary, it is requested that inventor Per Andersson be removed as an inventor due to the cancellation of the subject matter of claim 18.

40

C

Amendments

Claim 18 has been canceled.

Claim 16 has been amended for clarity purposes and to delete the limitation "or upstream of."

Claim 24 has been amended to recite that the flow paths are coated with protein. No new matter is added by these amendments.

Rejection under 35 U.S.C. §112

Claims 24 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Specifically, the rejection is directed to a lack of antecedent basis for the limitation of "flow path." Claim 24 has been amended to recite that the "flow paths" are coated with protein. In light of this amendment, applicants believe that this rejection is now moot and respectfully request that it be withdrawn.

Rejection under 35 U.S.C. §102

Claims 16 and 18 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 5,942,443 to Parce et al. ("Parce"). This rejection is respectfully traversed. Claim 18 has been canceled and claim 16 has been amended as noted above.

The Office Action states that Parce discloses a microfluidic device and a method for high throughput screening wherein cellular response of a test compound or series of test

compounds of a flowing suspension of living cells is combined with a concentration of a test compound and directed through a detection zone and a cellular response of the living cells is measured.

Parce does not teach the method as now claimed. The claimed method is directed to a method for observing the effect of one or more candidate compounds on cells where the microfluidic device comprises a main flow path which has an outlet, at least two inlet flow paths and a detection zone, wherein at least one inlet flow path intersects and merges with the main flow path at the detection zone. The interaction of the compound with the cell(s) is observed in the detection zone at the moment that the cell and the compound mix.

The Parce method is different. A careful review shows that the detection zone of Parce (referred to as the "detection window" numbered 116 in Figures 1, 2A, 2B, 4E, 4F; numbered 622 in Figures 6A, 6C; and "detector" in Figure 8) is located downstream of the intersection of the flow paths and the area where the test compound mixes with the cells. Nowhere does Parce teach that the interaction of the cell and the test compound can be detected at the time of mixing. In fact, Parce teaches in the Example beginning at column 21, line 64, and described in Figure 8, that the enzyme and substrate must travel 4 centimeters in a 48 second incubation period prior to passing through the detector. Nowhere does Parce teach the observation of the interaction of the test compound and the cell in the detection zone at the time the test compound and the cell mix.

Accordingly, Applicants submit that this §102(e) rejection is in error and respectfully request that it be removed.

Rejections under 35 U.S.C. §103(a)

First §103 rejection

Claim 22 stands rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Parce et al in view of Tracey et al ("Tracey"). This rejection is respectfully traversed.

Parce, as discussed above, does not teach the observation of the interaction of the test compound with the cell(s) in the detection zone at the moment that the cell and the compound mix.

Tracey discloses a micro-machined device and techniques used to assess cell deformability. Tracey presents results for red blood cells only, and merely speculates that such microchip based fluidic filter devices could be used with leukocytes. It does not describe any procedures necessary to perform the methods of the claimed invention. It does not describe chemical forms of red cell analysis but only physical measurement of cell rigidity through a measurement of cell flow rates. Thus, Tracey does not teach or suggest the claimed method of observing the effect of one or more candidate compounds on cell(s) in a microfluidic device.

Accordingly, Applicants submit that the combination of Parce in light of Tracey does not teach or suggest the claimed method. Thus, this rejection is in error and Applicants respectfully request that it be removed.

Second §103 Rejection

Claims 23-26 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Parce et al (US Patent 5,942,443) in view of Tracey as applied to Wilding et al ("Wilding"). As noted above, claim 16 and 24 have been amended. Claims 23-26 are ultimately dependent on claim 16. This rejection is respectfully traversed for the following reasons.

Parce and Tracey are discussed above. The Office Action states that Wilding disclose albumin-coated microchannels for the flow of biological fluids.

The combination of Parce and Tracey does not teach or suggest the claimed invention, i.e., independent claim 16, and the further addition of Wilding does not remedy the previously-noted shortcomings of either Parce or Tracey. Specifically, Parce and Tracey, considered singularly or in combination, neither teach nor suggest the observation of the interaction of the test compound and the cell in the detection zone at the time the test compound and the cell mix. This shortcoming of Parce and Tracey is not remedied by Wilding which merely shows albumin-coated microchannels. Thus, even if Wilding were properly combinable with Parce and Tracey, such a combination would not realize the presently claimed invention or render it obvious in view thereof.

Accordingly, Applicants submit that this §103(a) rejection is in error and respectfully request that it be removed.

Conclusion

Applicants submit that all of the claims in this application are now in condition for allowance. An early notice to that effect is respectfully requested.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: _____
Leslie J. Boley
Registration No. 41,490

P.O. Box 1404
Alexandria, Virginia 22313-1404
(650) 622-2300

Date: January 24, 2001